

# **INVASIVE SPECIES IMPACT ON THE DEPARTMENT OF DEFENSE**

**By  
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**2004 Department of Defense  
Conservation Conference**



US Army Corps  
of Engineers



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- **Do we really have any problems?**
- **Where are the problems?**
- **How extensive are they?**
- **Where is the greatest impact to DOD?**
- **Who has responsibility?**



# **Areas examined:**

- **Training**
- **Operations**
- **Military Movement**



# Military Training



## Salt Cedar



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# Salt Cedar/Tamarisk Management Methods

- **Mechanical + Chemical + Biological**
- **Problem ---- salt content in the soil**
- **Revegetation may be required and it is costly and difficult**



# Team Tamarisk

**March 2004 – Albuquerque, NM**



**Congressional Bills  
for Salt Cedar**

**HR 2707**

**S 1516**

**General Provisions  
\$100,000,000 over  
5yrs to western states**



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# *Arundo donax*



Since 1995 Camp Pendleton has participated in “Team Arundo” a systematic control program to manage this plant species



**Costly to Manage -- Millions of Dollars**

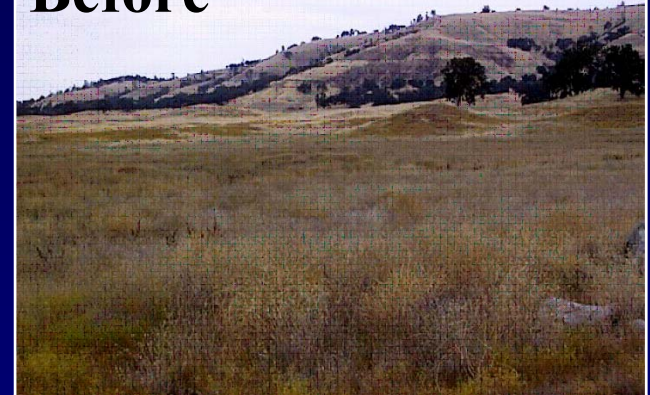


# Yellow Starthistle



**Integrated management procedures (fire, herbicides, biological) enabled training lands to be returned to a useful state**

**Before**



**After**



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## FHL 20,000 Acres Infested

# Treatment Methods

*Prescription Burning*  
*\$1/ acre*



*Chemical*  
*\$40/acre*



**20,000 Acres**

*Revegetation*  
*\$500-\$2000/ acre*



*Biological*  
*\$3/acre ?*



# Application for 1000 Acres

## Most sites

**Burning + Chemical + Biological**

$$1000 \times \$1 + 1000 \times \$40 + 1000 \times \$3 = \$44,000$$

## Some sites

**Burning + Chemical + Biological + Revegetation**

$$1000 \times \$1 + 1000 \times \$40 + 1000 \times \$3 + 1000 \times 500 = \$544,000$$

**In a survey for Legacy over 150 plant species  
were identified by the services as being problems  
at installations.**



# Training Exercises

- **Tandem Thrust U.S. & Australia**

**Exercise commander was stopped from entry until the ship was cleared (3-4 days) - Cost \$ ?**

- **Roving Sands 2001 -- U.S. & Germany**

**German ships were stopped from off loading at Beaumont, Texas – returned to Germany - Cost \$ ?**





# Operations



## Ballast Water

**New Rules effective 27 Sept**



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# Threatened and Endangered Species



Purple amole inflorescence© 2002  
Margo Bors

Juvenile arroyo toad

– Photo by Jackie Hancock, FHL Biologist



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- **The cost to comply with the regulations for ballast water are not known.**
- **Other costs related to invasive species are hard to determine because they are contained under operational costs.**





# Movement



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# Stopped the movement of Six C-17's --- 1999

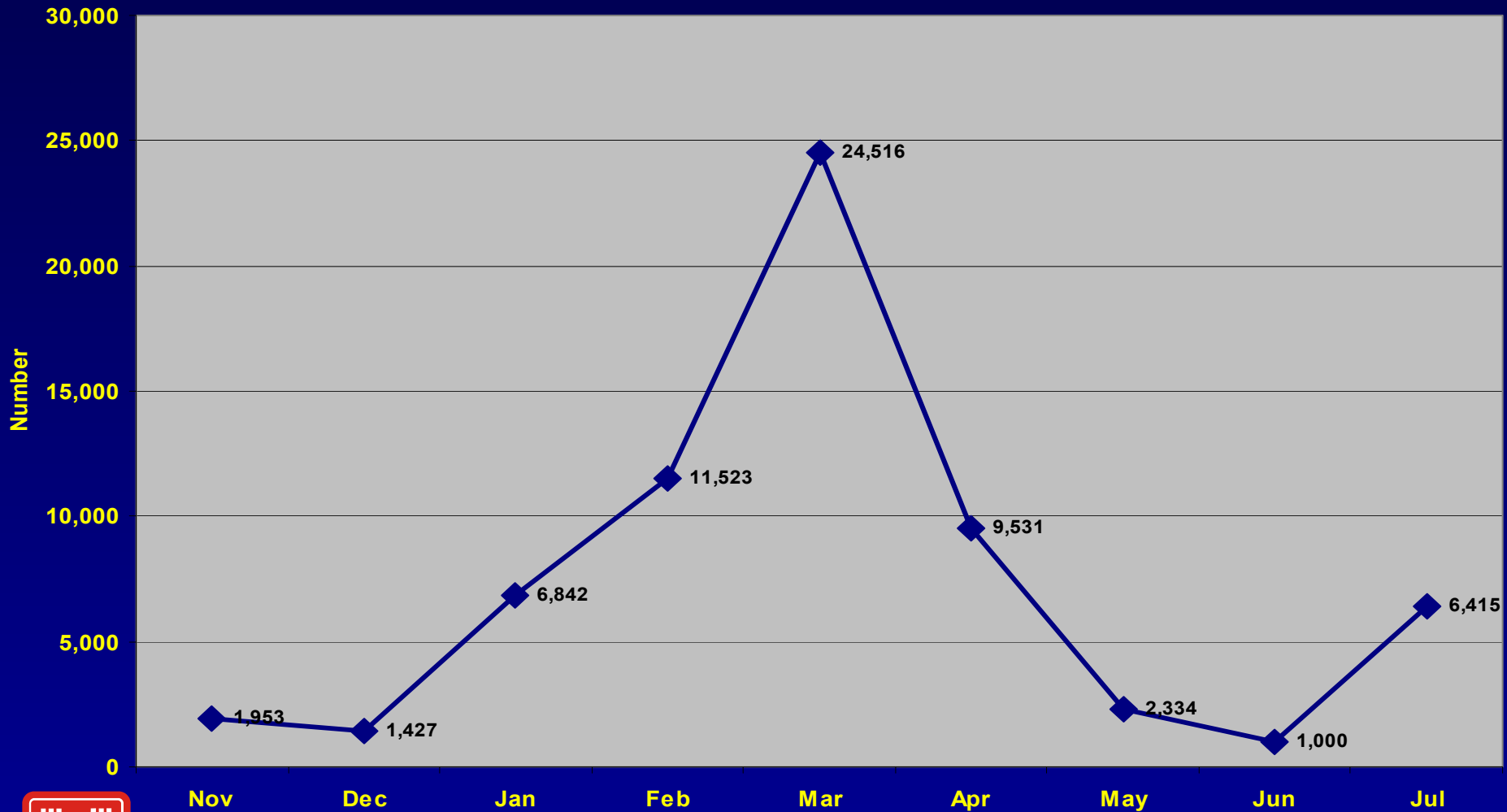


# **Over a Nine Month Period the following levels of Personnel and Material were Shipped out of Kuwait**

<b>Personnel --</b>	<b>228,393</b>
<b>Vehicles --</b>	<b>65,541</b>
<b>Conexes --</b>	<b>7,385</b>
<b>Containers --</b>	<b>9,857</b>
<b>Packages --</b>	<b>275,915</b>



# Monthly Breakdown on Vehicles Processed



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21 4 2004



# Inspection Process



# How Much Time Is Devoted to Cleaning?



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# Cleaning Times



14 to 24 Hours

4 to 14 Hours



# Cleaning Time Estimates

**November --- 1,953 Vehicles Were Cleaned**

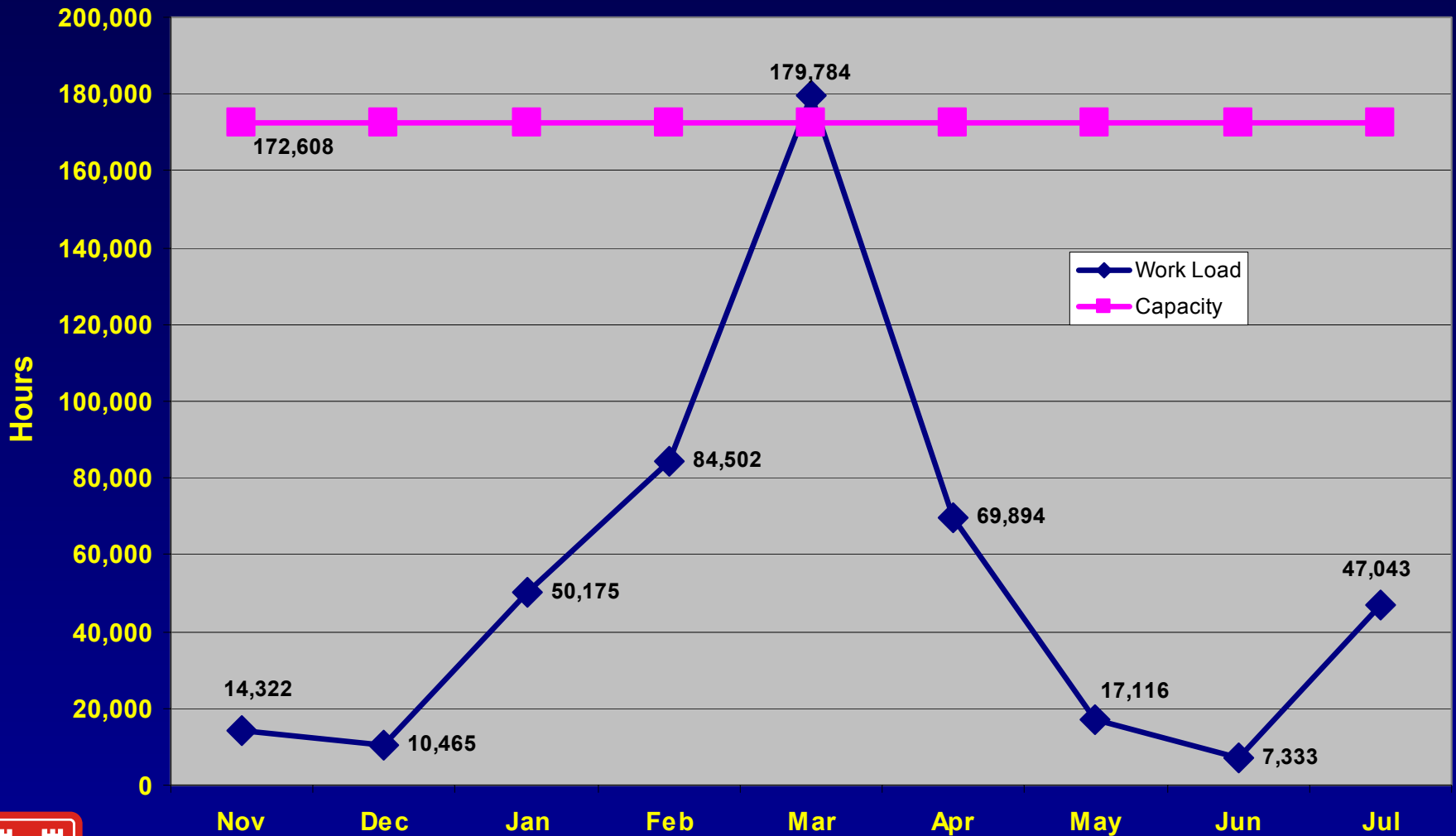
<b>November Vehicles 1,953</b>	<b>Cleaning Times Estimated</b>	<b>Total Time</b>
<b>1/3 of Total Vehicles -- 651</b>	<b>14 hours</b>	<b>9,114 hours</b>
<b>2/3 of Total Vehicles -- 1302</b>	<b>4 hours</b>	<b>5,208 hours</b>
<b>Total 1,953</b>		<b>14,322 hours</b>



<b>Month</b>	<b>Vehicles</b>	<b>1/3--14hr</b>	<b>2/3 – 4 hr</b>	<b>Total Time Hr</b>
<b>Nov</b>	<b>1,953</b>	<b>9,114</b>	<b>5,208</b>	<b>14,322</b>
<b>Dec</b>	<b>1,427</b>	<b>6,659</b>	<b>3,805</b>	<b>10,465</b>
<b>Jan</b>	<b>6,842</b>	<b>31,929</b>	<b>18,245</b>	<b>50,175</b>
<b>Feb</b>	<b>11,523</b>	<b>53,774</b>	<b>30,728</b>	<b>84,502</b>
<b>Mar</b>	<b>24,516</b>	<b>114,408</b>	<b>65,376</b>	<b>179,784</b>
<b>Apr</b>	<b>9,531</b>	<b>44,478</b>	<b>25,416</b>	<b>69,894</b>
<b>May</b>	<b>2,334</b>	<b>10,892</b>	<b>6,224</b>	<b>17,116</b>
<b>Jun</b>	<b>1,000</b>	<b>4,667</b>	<b>2,667</b>	<b>7,333</b>
<b>Jul</b>	<b>6,415</b>	<b>29,937</b>	<b>17,107</b>	<b>47,043</b>
<b>Total</b>	<b>65541</b>	<b>305,858</b>	<b>174,776</b>	<b>480,634</b>



## Work Load With 232 Points & 24 hrs.



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Month	Total Hours	Labor Cost – 2 people @ 5/Hr	Labor Cost – 2 people @ 10/Hr
Nov	14,322	\$143,220	\$286,440
Dec	10,465	\$104,647	\$209,294
Jan	50,175	\$501,747	\$1,003,494
Feb	84,502	\$845,020	\$1,690,040
Mar	179,784	\$1,797,840	\$3,595,680
Apr	69,894	\$698,940	\$1,397,880
May	17,116	\$171,160	\$342,320
Jun	7,333	\$73,333	\$146,666
Jul	47,043	\$470,433	\$940,866
Total	480,634	\$4,806,340	\$9,612,680





# Cost of Vehicle Washing and Inspection (9 Months)

<b>Cost for Washing</b>	<b>\$4,806,340</b>	<b>\$9,612,68</b>
<b>Inspection Force- - 430 Personnel @ \$20,000/Yr.</b>	<b>\$6,450,000</b>	<b>\$6,450,000</b>
<b>Total Cost</b>	<b>\$13,206,340</b>	<b>\$16,062,680</b>



# What are the Cleaning Cost?



**Personal equipment**



**Aircraft**



**Containers**



# **Why do we have to Clean Equipment?**

**Protect the United States from the  
Introduction of Invasive Species!!!**

- **Pathogens that attack crops**
- **Animals that feed on vegetation**
- **Organisms that disrupt the Ecology**



# Natural Resource Mangers

**What impact does dirty  
equipment have on you?**



**Dirty  
Equipment**



**Carries  
Invasive  
Species**

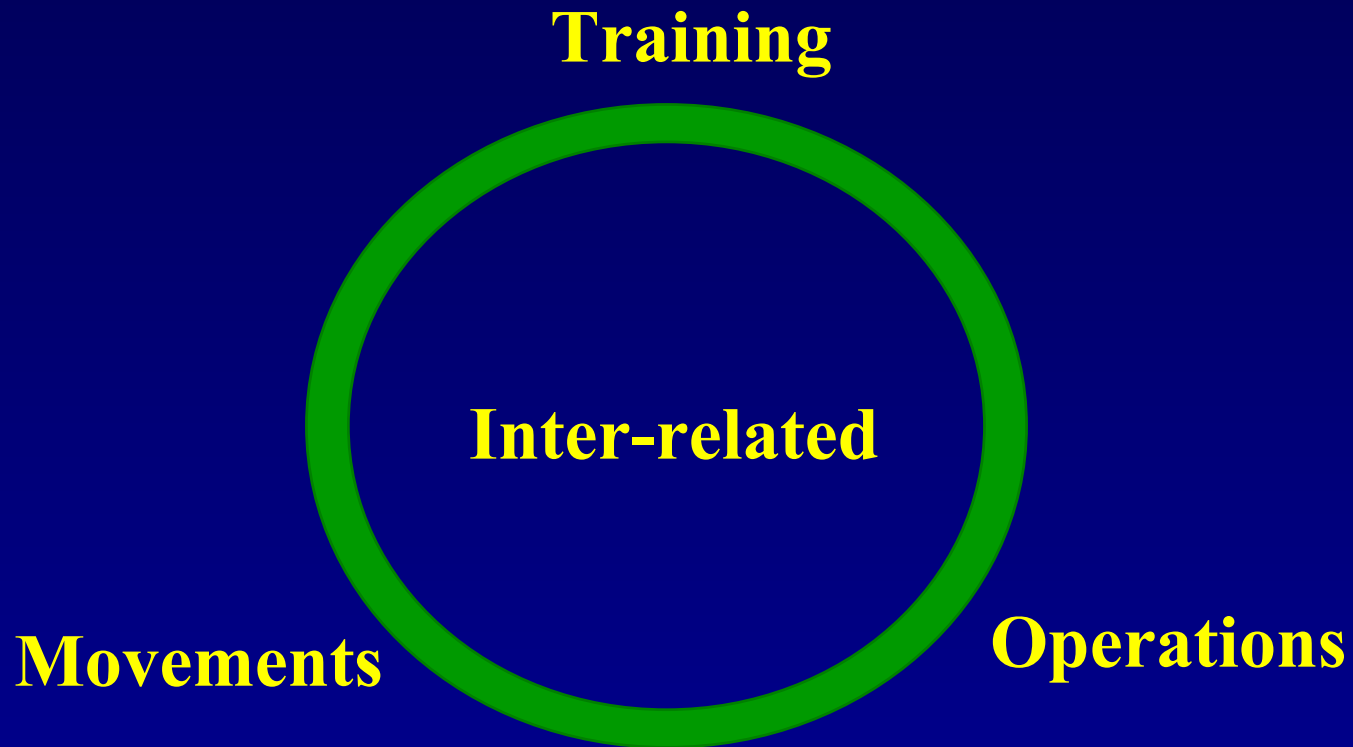


**Long Term  
Problems**



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# Invasive Species



- **Do we really have any problems?**

**YES!!**

- **Where are the problems?**

**Training, Operations & Movement**

- **How extensive are they?**

**Very Extensive**

- **Where is the greatest impact to DOD?**

**?? Movement – Training - Operations**

- **Who has responsibility?**

**Unit Commander**





# Our Mission



## Support The Troops



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